Maine Clean Air Zone Projects

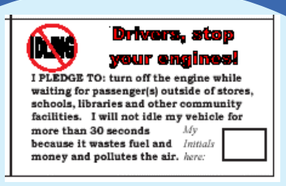
(Service Learning Opportunities)

Partners:

*Community Volunteers
*School Eco-Teams
*Maine DEP-Air Bureau
*American Lung Association
*Council of Churches
*Sierra Club-Cool Cities Team

COMMUNICATION TOOLS:

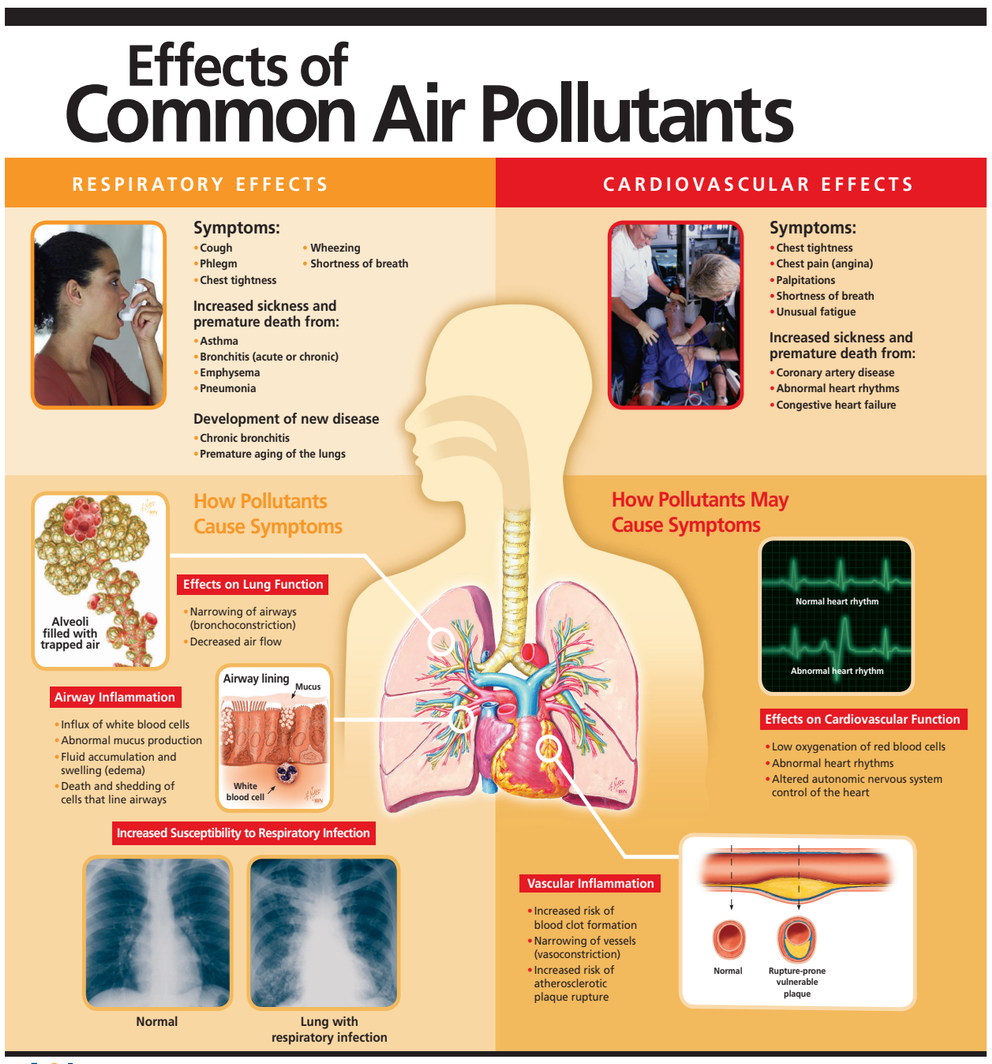
Magnets



Pledge Cards

Decals & Signs

Ask about our free Gallery Walk Challenge, Teaching Resources and Communications Tools...



Asthma & Diesel Exhaust

- Particles in air pollution can aggravate asthma & respiratory symptoms
- Children are sensitive to air pollution -- their lungs are developing and they have a faster breathing rate

Did you Know?

Children diagnosed with asthma doubled between 1983 and 1995.

13.2% of Maine children have been diagnosed with asthma. (1 in 5 households)

Asthma related absences each year in Maine:
65,000 lost school days
37,500 lost work days

A *Community-based* Social Marketing Initiative

Key Steps:

Conducting Research

Establishing Norms & Getting Commitment

Providing Prompts & Reminders

Raise public awareness of health and environmental impacts from idling vehicles then foster community stewardship behaviors.

"Stewardship behavior is most effectively achieved through initiatives delivered at the community level."

Fostering Sustainable Behavior - Doug McKenzie Mohr & William Smith

Clean Air Zone

Drivers, stop your engines!

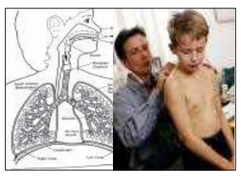
For your family's health, you can start a local Clean Air Zone campaign; spreading the word neighbor to neighbor and identifying potential Clean Air Zones in your community. Call now (207-761-5616) to obtain a Clean Air Campaign - Tool Kit to get started.

The Benefits: **Breathe Easier, Save Money, and Protect our Air and Health by turning off your vehicle whenever parked.**

There are many good reasons not to idle.
- Idling causes pollution.
- Pollution can cause health problems.
- Idling wastes expensive fuel.
- Excessive idling can damage engine components.
- Conserving fuel promotes energy independence.

The Problem: Air Pollution & Our Health

In Maine, 13.2% of children suffer from asthma - that's the highest rate in New England.



Vehicle emissions contribute air toxics, as well as nitrogen oxides which react with sunlight to form ozone pollution.

Vehicle emissions can trigger asthma attacks and other respiratory and cardiovascular health effects.

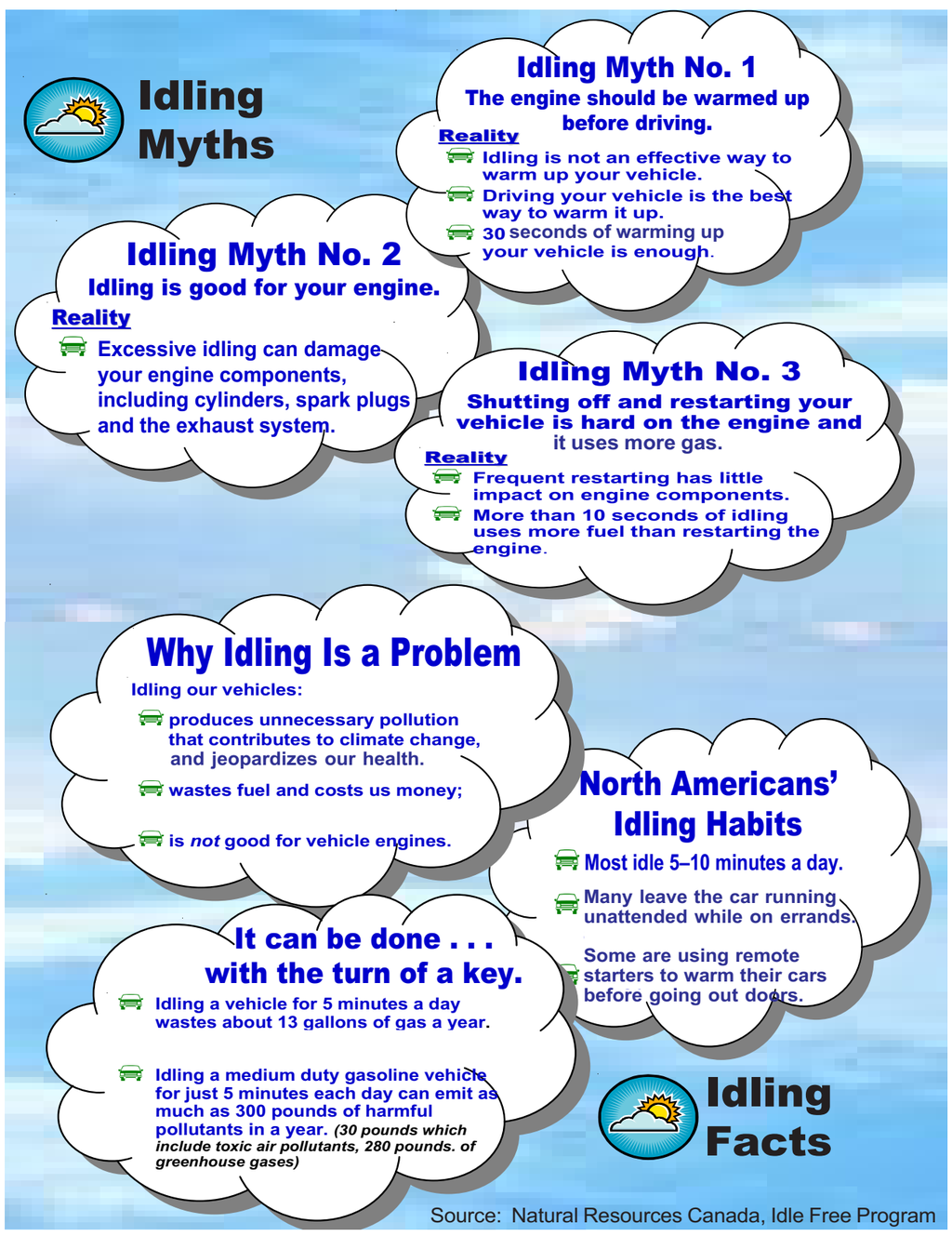
Children are more sensitive to pollution; they breathe 50% more air per pound of body weight.

Vehicle or mobile sources contribute more than 50% of air pollution emissions in Maine.

Sponsors: American Lung Association of Maine; Maine Council of Churches; Sierra Club Maine Chapter; Maine Clean Communities = MC²

Building Healthier Communities

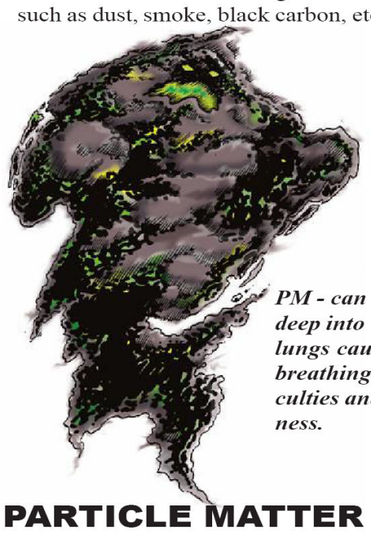
Clean Air Zones Program



CAZ Classroom Teaching Tools help students learn all about Air Pollution

PM THE LURKING HULK

Particle Matter is very tiny "solids" from natural and manmade stuff that gets into the air such as dust, smoke, black carbon, etc.



PM - can travel deep into the lungs causing breathing difficulties and sickness.

PARTICLE MATTER (PM)

O3 the OZONATOR

AIR MASSES COMING FROM THE SOUTHWEST CARRY POLLUTANTS (NOx and VOCs) AND ....ON HOT SUNNY DAYS - they chemically react to form O3..

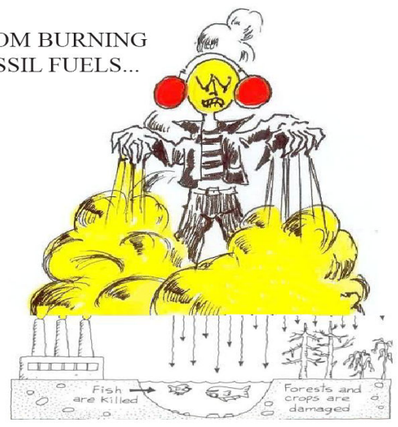
Ozone (O3) "burns" your lungs like a sunburn and causes respiratory damage.

GROUND LEVEL

OZONE

SO2 ACIDMAN

FROM BURNING FOSSIL FUELS...

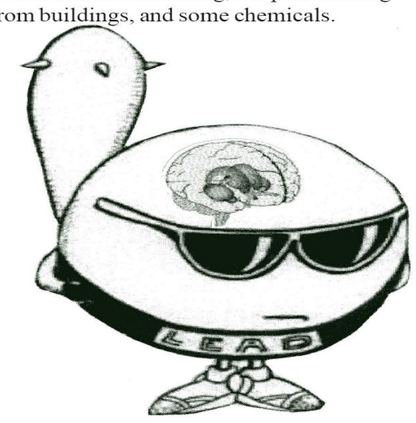


SO2 ACIDIFIES RAIN, WATER AND SOIL; KILLS FISH AND DAMAGES CROPS AND TREES.

SULFUR DIOXIDE

Pb the LEADHEAD

Lead from metal refining, old paint flaking from buildings, and some chemicals.

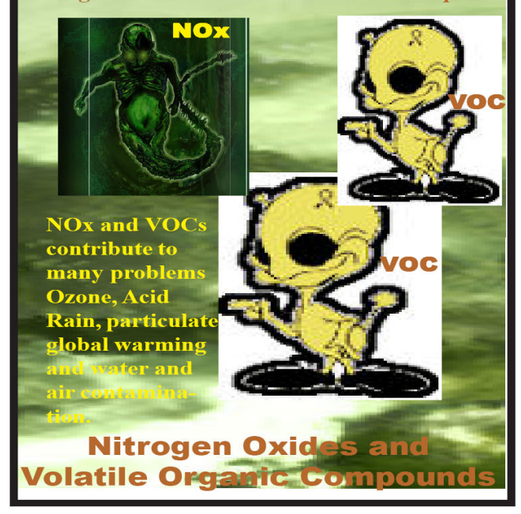


Can cause brain damage, lethargy and reduced mental sharpness - especially a problem with children's developing brains.

LEAD

The DYNAMIC CREEPY CRITTERS - NOx & VOCs

NOx from burning fuels and VOCs from evaporating chemicals get transported over long distances and form a *chemical soup.*

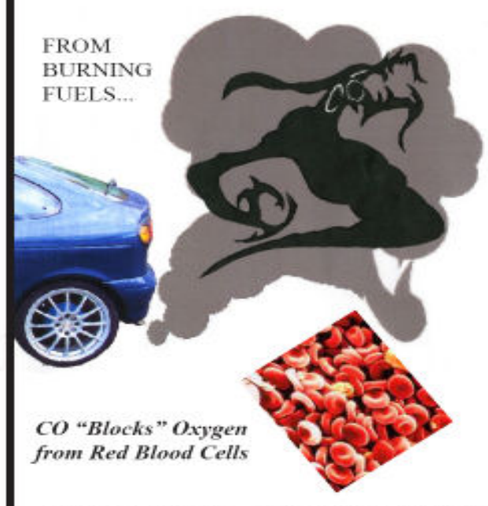


NOx and VOCs contribute to many problems Ozone, Acid Rain, particulate, global warming and water and air contamination.

Nitrogen Oxides and Volatile Organic Compounds

Gasper the CO Phantom

FROM BURNING FUELS...



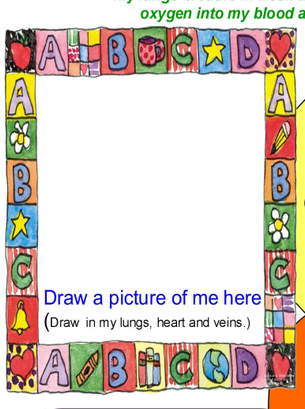
CO "Blocks" Oxygen from Red Blood Cells

CARBON MONOXIDE

& its Health Effects

BODY MATH: All about Me & the Air I Breathe

My lungs breathe in fresh air to help my heart pump oxygen into my blood and through my body.



Draw a picture of me here
(Draw in my lungs, heart and veins.)

Body Math

1. Measure & Record

My age: _____
My height: ____feet/inches
My weight: ____ pounds
My sex: girl or boy

(Body Math Points "A") My Body Size :
Small, Medium, Large
1pt. 2pts. 3pts.

2. How much air I can breathe:

____Peak Flow ("PF")
(Use peak flow meter to measure how much air you can blow out fast.)
OR ____Total Volume ("TV")
(Take a very deep breath and blow up balloon with ALL the air in your lungs. Measure the circumference in inches or centimeters.)

How fast my heart beats:

___-resting pulse
___-working pulse
(Count pulse for 10 seconds before and after exercise.)

3. Body Conditioning I exercise:

(3 pts) _____ LOTS (I'm an athlete)
(2 pts) _____ SOME (20 minutes; 2-3 times a week)
(1 pt) _____ A LITTLE (not much)
OR
I've been sick lately)
(Body Math Points "C")

Record & Add Body Math Points here:

Breath Points (PF or TV) =___;
Body Size (A) ____ + Conditioning (B) ____ - ____(C).
Make Group Graph: "C" *vs* "PF or TV" for all students in group/class.

Turn page over to compare and graph how much exercise we get, and how it can improve our body fitness.

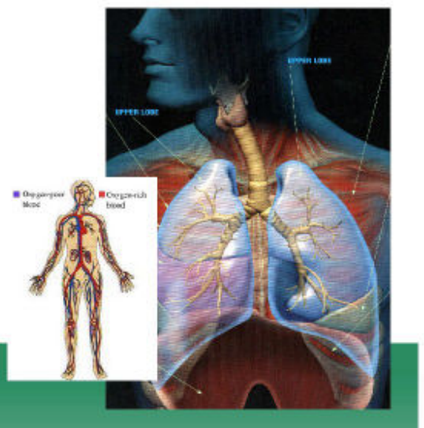
"The lungs have an enormous surface area. Every day we breathe in 20,000 liters of air - compared to just a few liters of food and drink - we breathe in viruses, bacteria, tobacco, smoke and other particles in the air."*

BODY NUMBERS

HOW MUCH AIR DO YOUR LUNGS HOLD?

____Total Volume ("TV")
(Take a very deep breath and blow up a balloon with ALL the air in your lungs. Measure the circumference in inches or centimeters.)
You could also use a spirometer or special spirometry bag to get a Total Volume measurement in liters.

My lungs breathe in fresh air to provide oxygen for my heart to pump oxygen into my blood and through my body.



HOW MUCH AIR CAN YOU EXPEL FAST...PEAK FLOW?

"The long term effects of air pollution are loss of lung function and possible respiratory disease, but it can also cause heart problems."*

* "Clearing the Air", Jonathan Shaw, Harvard Magazine, 2005

WHAT VARIABLES AFFECT OUR LUNG & HEART HEALTH?

Conditioning, genetics, body size, gender, age, weight, other_____?

____ Peak Flow ("PF")
(Use a peak flow meter to measure how much air you can blow out fast.)
This is a measure of how healthy and conditioned your lungs and airways are. You can use this tool daily to keep track of respiratory changes, especially if you have asthma.

Body Conditioning I exercise:

(7-9pts.)_____ LOTS (I'm an athlete)
(4-6 pts)_____ SOME (20 minutes; 2-3 times a week)
(1-3 pts)_____A LITTLE (not much) OR I've been sick lately)

How fast my heart beats:

___- resting pulse
___- working pulse
(Count pulse for 10 seconds before and after exercise - multiply x 6 to get the beats per minute.)

MEASURE & GRAPH THE DATA